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REPORT OF TEST OF DAVIS 3-INCH NONRECOIL CANNON MOUNTED IN MARTIN BOMBER

(ARMAMENT SECTION REPORT)

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REPORT OF TEST OF DAVIS 3-INCH NONRECOIL CANNON MOUNTED IN MARTIN BOMBER.

OBJECT OF TEST.

To determine the practicability of mounting a 3-inch Davis nonrecoil cannon on an airplane and firing it in the air.

DATE AND PLACE OF TEST.

This test was conducted at McCook Field, Dayton, Ohio, during November and December of 1921.

DESCRIPTION OF APPARATUS.

The gun as mounted for test on the ground is shown in Figures 1, 2, 3, and 4. The ammunition disassembled is shown in Figure 7. In this gun the recoil of the forward barrel is counterbalanced by that of the rear barrel in which a dummy charge is fired simultaneously with the projectile. Instead of having the breech closed by a breechblock it is left open, and a charge of fine shot which quickly dissipates is fired from the rear end. In this way the action is counterbalanced by reaction and the recoil effect is reduced to a minimum. The gun has but one powder chamber and one-half the powder may be regarded as propelling the forward projectile and the other half as propelling the dummy charge. The gun weighs about 180 pounds, and one round of ammunition weighs about 47½ pounds. The projectile weighs about 15 pounds. For air test the gun was mounted on a Martin bomber as shown in Figure 5.

DESCRIPTION OF TEST.

A test was made on the ground by firing into a pond at a depression angle of about 45 degrees. Two rounds were fired without any noticeable recoil. The gun was then mounted to fire into a sand butt, and one round was fired satisfactorily. An airplane wing section was then placed with its chord normal to the bore of the gun about 7 feet to the rear of the gun trunnions and with its leading edge about 5 feet from the axis of the gun barrel. The gun was fired horizontally to determine the blast effect on this wing and it was found that, with the wing moved to within 2 feet of the axis of the barrel the blast effect was not sufficient to damage the wing. It was decided that the gun could be safely fired from a mount in the nose of a Martin bomber, provided the gun was not fired at an angle which would place the barrel axis nearer than 2 feet to the wing. A yoke was made to mount this gun as shown in Figure 6.

Eight rounds were fired from an altitude of about 1,500 feet with satisfactory results.

CONCLUSIONS.

The blast effect or concussion was not harmful to the gunner but seriously inconvenienced the pilot. The gun is easily maneuvered since the wind pressure is balanced. The operation of loading and unloading is not particularly difficult.

For the purpose of determining the usefulness of a gun of this type it should be mounted on a gimbal joint to fire through the bottom of the fuselage, so the gunner will be protected from the wind.

For use as a bombardment gun this type is much better than the conventional type of cannon, due to the absence of recoil and low weight.

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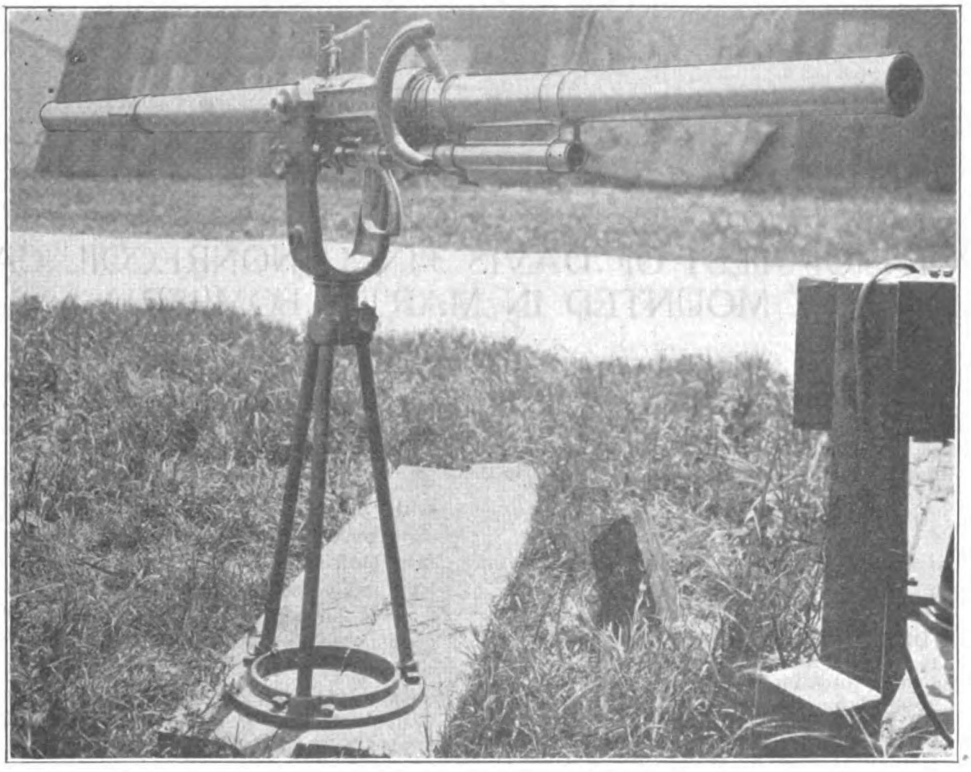

FIG. 1.—Davis 3-inch nonrecoil gun. Left rear view on ground test mount.

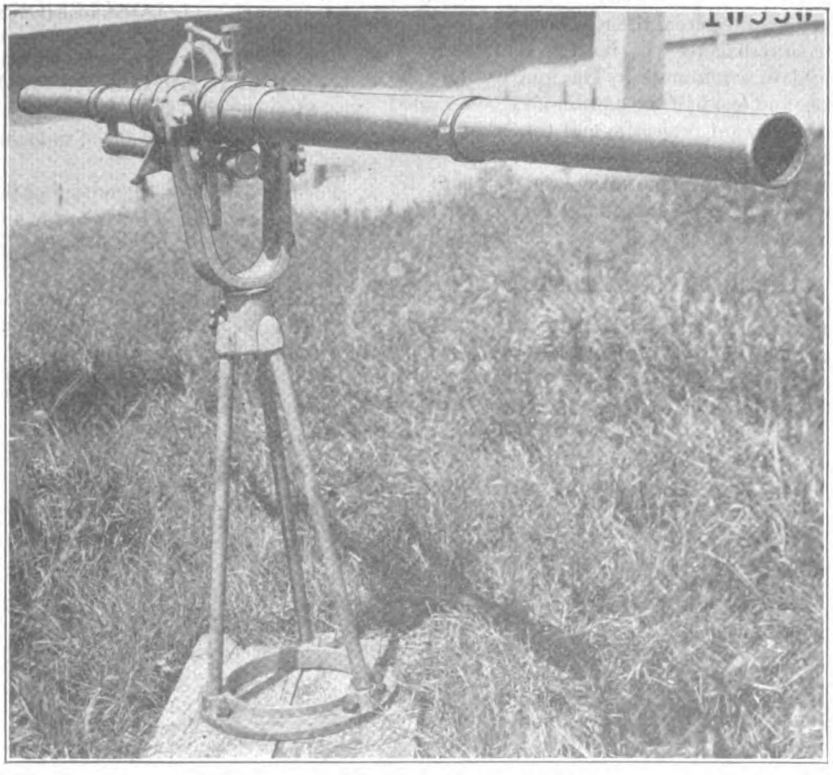

FIG. 2.—Davis 3-inch nonrecoil gun. Right front view on ground test mount.

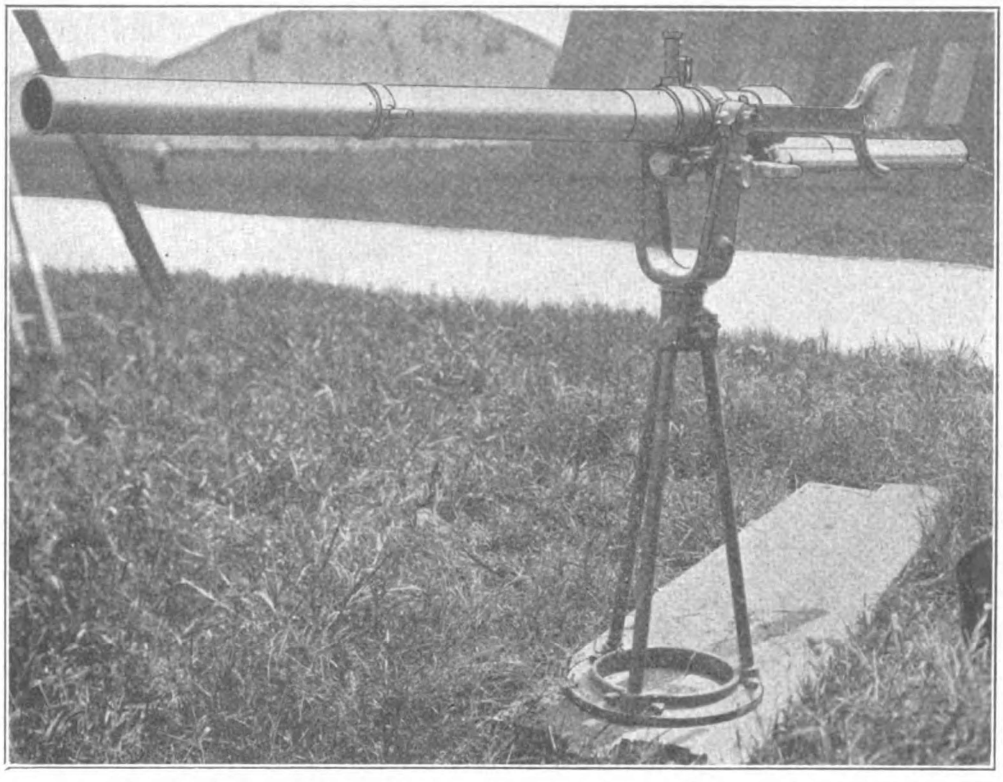

FIG. 3.—Davis 3-inch nonrecoil gun. Left front view on ground test mount.

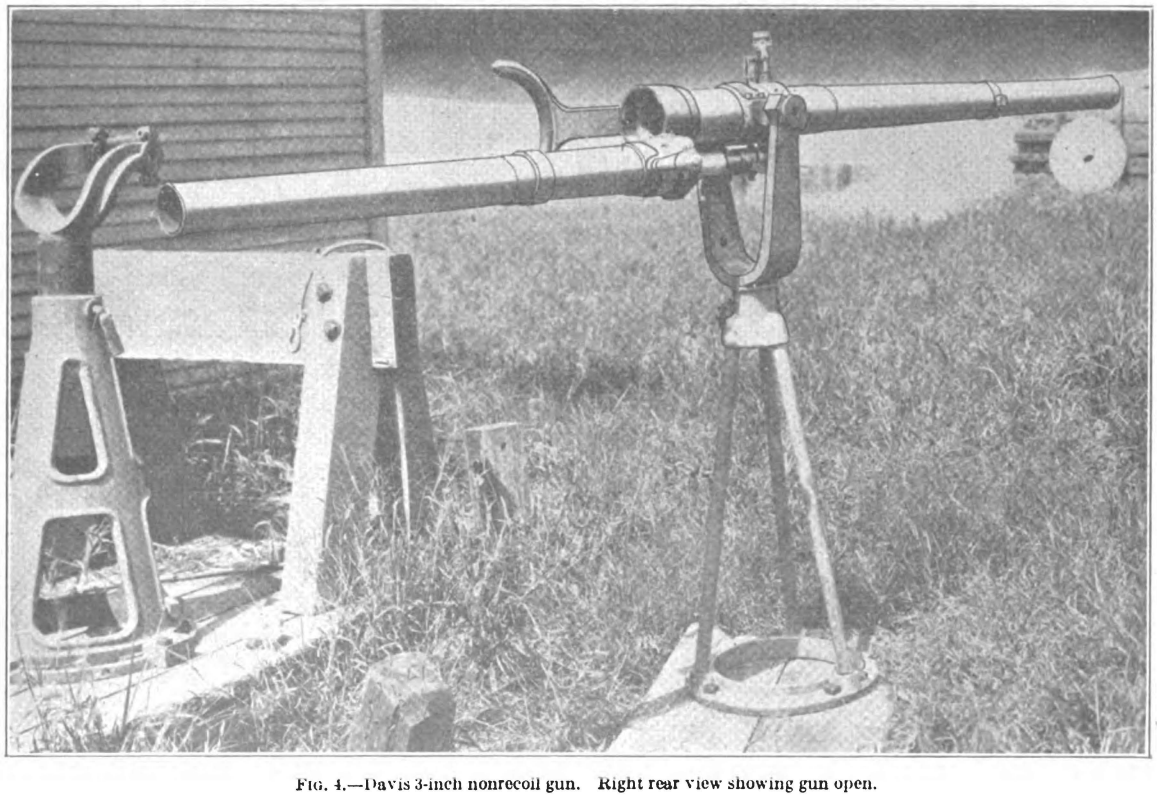

FIG. 4.—Davis 3-inch nonrecoil gun. Right rear view showing gun open.

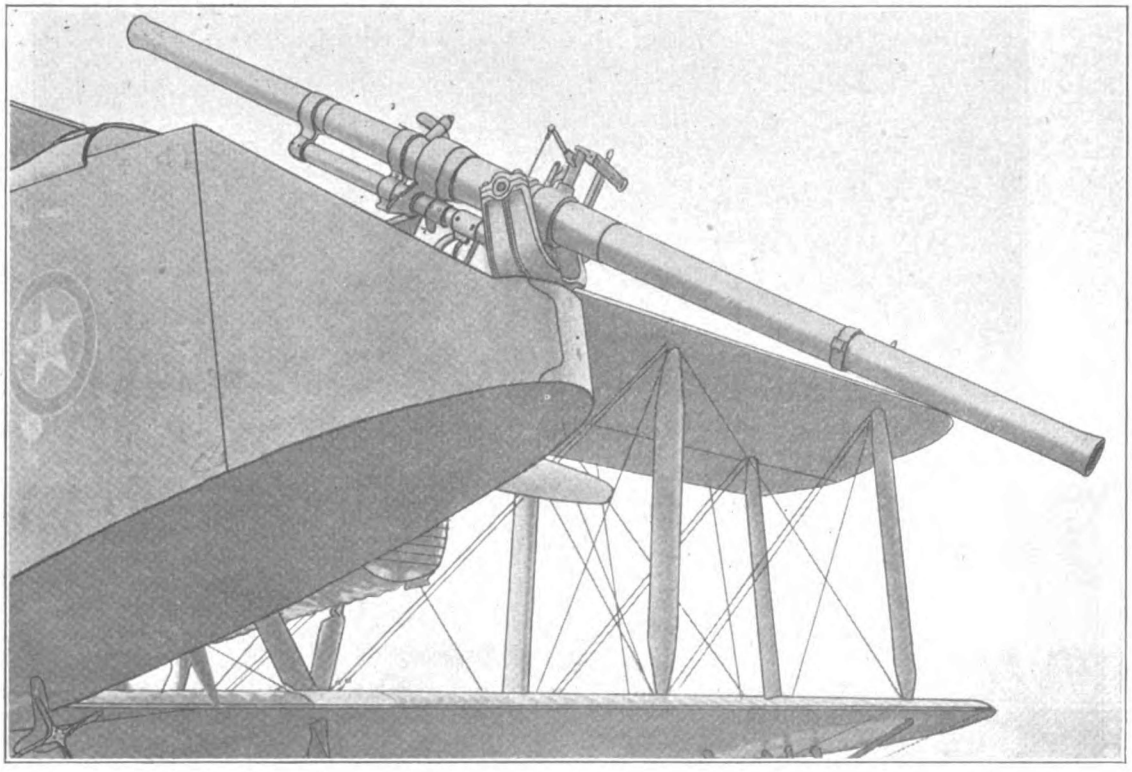

FIG. 5.—Davis 3-inch nonrecoil cannon mounted on Martin bomber.

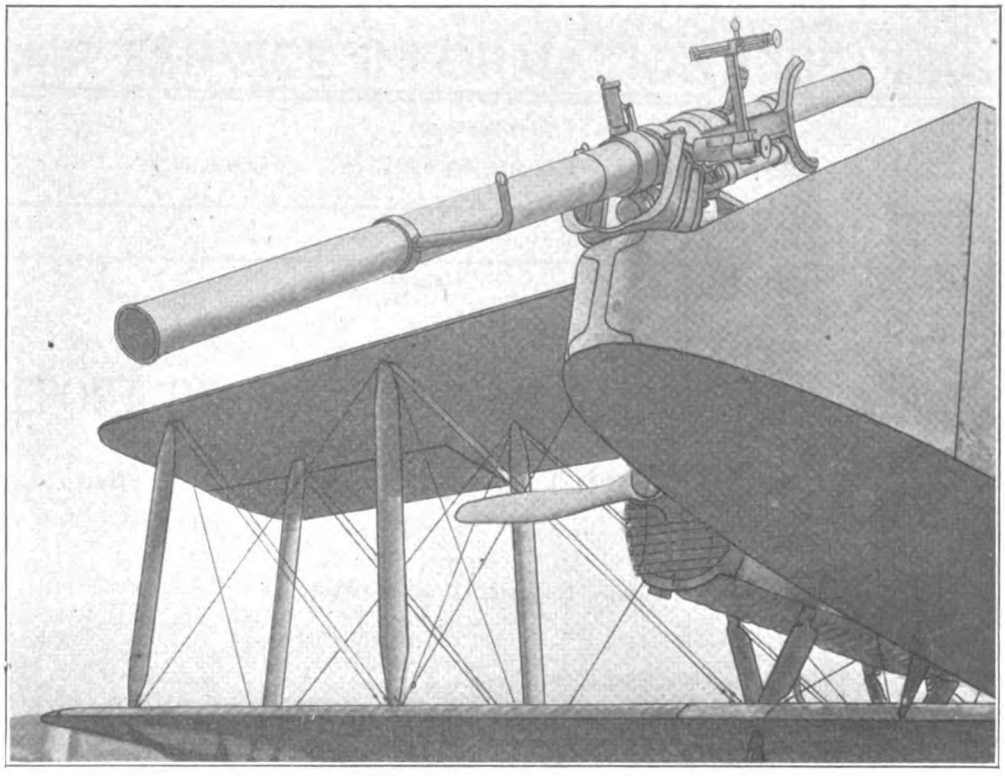

FIG. 6.—Davis 3-inch nonrecoil cannon mounted on Martin bomber.

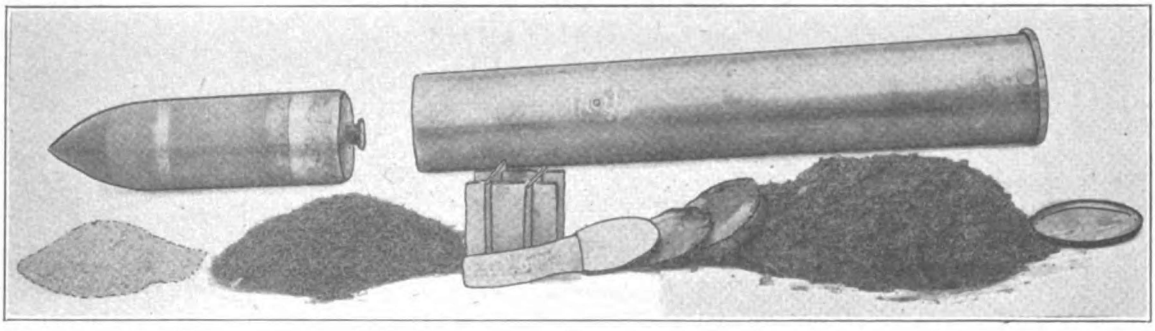

FIG. 7.—Davis 3-inch nonrecoil gun disassembled ammunition.